Personal Protective Equipment Guidlines

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES

EYE AND FACE PROTECTION

Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment. In such cases employers shall make currently available a type of protector suitable for work to be performed and employees shall use such protectors. No unprotected person shall knowingly be subjected to a hazardous environmental condition. Suitable eye protectors shall be provided where machines or other operations present a hazard of flying objects, glare, liquids, injurious radiation, or combination of these hazards to the eye(s).

A. Eye protections must meet standards established by the American National Standards Institute's Standard Practice for Occupational and Educational Eye and Face Protection.

B. Advantages of safety spectacles over standard eyewear.

1. Safety lenses have greater thickness than standard eyewear to help resist breaking. This will be true even when the new federal legislation dealing with general eyewear goes into effect.

2. Safety lenses may be either heat-treated or plastic. Heat treatment gives the lens greater strength. Heat treating changes the physical properties of the glass so that it breaks into cubes rather than silvers, which can pierce the eye.Plastic lenses are naturally hard and need no treatment.

3. Safety lenses are fitted into the front of industrial safety frames. The rear opening of these frames is smaller than the front opening. Consequently, under impact, the rear should help to absorb the force of the blow and assist in retention of lens fragments should the lens shatter.

4. The plastic frames of safety spectacles are difficult to ignite and are slow burning.

5. Safety spectacles with side shields which conform to the orbital area of the eye provide side protection which is absent in standard eyewear.

6. Scratch resistance

A. The University of California Lawrence Livermore Laboratories report test results which demonstrate that heat-tempered glass lenses are more difficult

to scratch than non-tempered lenses under comparable scratch-producing conditions. Safety type tempered lenses are more likely to be exposed to more abrasive conditions on the job and once the protection surface has been breached, scratches will tend to grow bigger and thereby weaken the tempered lenses.

C. Eye protection should be worn where the following operations are conducted:

1. **Use of molten metals or other materials.**
2. **Milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials.**
3. **Heat treatment, tempering or kiln firing of any metal or other materials.**
4. **Gas or electric arc welding or other forms of welding processes.**
5. **Handling of corrosive, caustic, or explosive chemicals.**
6. **Any other operation or activity involving mechanical or manual work in any area that is potentially hazardous to the eyes.**

D. Persons whose vision requires the use of corrective lenses or spectacles and who are required by this standard to wear eye protection shall wear goggles or spectacles of one of the following types:

1. **Spectacles whose protective lenses provide optical protection.**
2. **Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.**
3. **Goggles that incorporate corrective lenses mounted behind the protective lenses.**

E. Safety spectacles with side shield that conform to the orbital area of the eye are considered to be basic eye protection.

F. Face shields and chemical goggles should be used only as additional protection to safety glasses. They are not considered as primary eye protection.

G. Filter lenses

1. **Welding - protection against infra-red or ultra-violet radiation. Use proper shade of absorptive lenses.**
2. **Laser eye protection - should use safety goggles of optical density adequate for the wavelength or energy involved.**

H. Contact lenses

1. **The National Society for the Prevention of Blindness strongly advises that the use of contact lenses of any type by industrial employees while at work be prohibited, except in rare instances. The National Society**

recommends that any exception be verified in writing by the physician or optometrist who sanctions such use in a specific industrial environment. Contact lenses do not provide eye protection in the industrial sense; their use without eye and/or face protective devices which meet or exceed the requirements of ANSI Z78 should never be permitted.

2. The removal of foreign substances, both liquid and dust, from under a lens could be difficult. Serious damage may result before the lens can be removed.

3. A contact lens may be displaced without warning, thereby causing immediate incapacitation by sudden change of vision, excessive tearing, light sensitivity, and squeezing of the eyelids.

4. Contact lenses may be harmful to the eyes of an unconscious person or a person in shock. Care should be taken to remove contact lenses safely.

5. If contact lenses are allowed in eye protection areas then all students and nstructors who regularly wear contact lenses during school hours and use shop or laboratory facilities, should be identified in school medical records. This information should be made known to their lab and shop instructors. Students allowed to wear contact lenses in eye protection areas must have immediate access to eye protective equipment of industrial quality.

I. Maintenance

It is essential that the lenses of eye protectors be kept clean. Continuous vision through dirty lenses can cause fatigue and become a contributory factor in accidents. Daily cleaning of eye protectors is recommended. Pitted or scratched lenses reduce vision and seriously reduce protection. They shall be replaced immediately. Replace headbands. Slack, worn-out, sweat-soaked, knotted, or twisted headbands do not hold the eye protector in proper position. Visual inspection can determine when the elasticity is reduced to a point beyond proper function. To prolong the life of eye protectors, they shall be placed in suitable cases or containers between periods of use.

J. Issues and use

Protectors are a personal item and should be for the exclusive use of the person to whom they are issued. If circumstances require re-issue, the protectors shall be thoroughly cleaned and disinfected as described in the following.

K. Disinfection

When a person is assigned protective equipment, it is recommended that this equipment be cleaned and disinfected regularly, without haring by another person unless disinfected. Thoroughly clean all surfaces with soap or suitable detergent and warm water. Carefully rinse all traces of soap or detergent. Completely immerse the protector for ten minutes in a solution of modified phenol hypo-chlorite, or quaternary ammonium compounds, in a strength specified by the manufacturer, at a room temperature 68F. Remove protector from solution and suspend in clean place for air drying at room temperature, or with heated air. Do not rinse because this will remove the residual effect. Protectors showing need for extensive cleansing should be disassembled to the extent possible without tools prior to the washing and disinfection procedure. Replace defective parts with new ones. The dry parts or items should be placed in clean, dust-proof containers for protection.

L. Eye wash facilities

Where chemicals are stored or handled, eye wash facilities should be available with in a 100ft proximity of the work area. In emergency situations, removal of chemicals from the eyes is imperative and time is of the essence.

1. Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specification contained in American National Standards Institute, Safety Requirements for Industrial Head Protection. (Z89.1-1969)

2. Helmets for the head protection of employees exposed to high voltage electrical shock and burns shall meet the specifications contained in American National Standards Institute. (Z89.2-1970)

3. Persons working in the shops around machinery or in locations which present a hair catching or fire hazard shall wear caps or other type of head covering which completely covers the hair. Caps with metal buttons or metal visors shall not be worn around electrical hazards.

4. Hard hats shall be worn by employees who work around or under scaffolds or other overhead structures, or who are otherwise exposed to the hazards of falling materials and propelled objects.

OCCUPATIONAL FOOT PROTECTION

1. Calks or other suitable footwear which will afford reasonable protection from slipping shall be worn while working on logs.

a. Safety-toe footwear for employees shall meet the requirements and specifications in American National Standard for Men's Safety-Toe Footwear. (Z41.1-1967)

2. Workmen who work in areas where there is a possibility of foot injury due to falling or rolling objects shall wear safety footwear.

ELECTRICAL PROTECTIVE DEVICES

1. Rubber protective equipment for electrical workers shall conform to the requirements established in the American National Standard Institute standards as specified in the following list:

Item	Standard
Rubber insulating gloves	J6.6-1979
Rubber matting for use around electrical apparatus	J6.7-1935 (R1971)
Rubber insulating blankets	J6.4-1971
Rubber insulating hodds	J6.2-1950 (R1971)
Rubber insulating line hose	J6.1-1950 (R1971)
Rubber insulating sleeves	J6.5-1971

2. Where switches or fuses of more than 150 volts to ground are not guarded during ordinary operations, suitable insulating floors, mats or platforms shall be provided on which the operator must stand while handling the switches.

HEARING PROTECTION - OSHA Noise Standard 1910.95

Noise Controls

A. Administrative Controls
1. **Limit worker's time in a noise hazard area**
2. **Limit duration of noisy operation**
3. **Increase distance between worker and noise source(s)**

B. Engineering Controls
1. **Elimination of noisy process equipment - change method of processing.**
2. **Substitution with quieter equipment**

3. **Total or partial machine enclosure**
4. **Personnel enclosure**
5. **Barriers and partitions**
6. **Vibration mounting**
7. **Mufflers and silencers**
8. **Damping**
9. **Absorption**
10. **Maintenance and adjustment of machinery**

C. When engineering and administrative procedures cannot adequately control noise exposure, ear protection becomes increasingly important.

1. Ear plugs - occlude ear canal. Most common type is made of rubber, neoprene, plastic or fiber glass. Overall attenuation values include:

- **a. Cotton wool - 8 dB.**
- **b. Waxed cotton wool or glass-fiber wool - 20 dB.**
- **c. Individually molded acrylic - 18 dB.**
- **d. Individually molded silicon rubber - 14 dB.**
- **e. Mass produced rubber plugs - 18-25 - dB.**
- **f. Semi-insert silicon rubber - 14 dB.**

2. Ear muffs - designed to cover external ear. Offers some protection as plug at frequencies above 1000 Hz only certain muffs equal the performance of plugs.

- **a. Heavy - 40 dB.**
- **b. Medium - 35 dB.**
- **c. Light - 25 dB.**

D. Most devices available provide between 10 to 20 dB attenuation below 1000Hz and30-45 dB above 1000 Hz. Attenuation of frequencies above 2000 Hz is very effective with a tight seal, but effectiveness diminishes with frequency.It is important to check protector's efficiency from time to time by audiometry.

C. Fitting and indoctrination

Each employee should be fitted for his or her ear protectors. If plugs are used, they should be fitted individually for each ear.

As with many kinds of personal protection, it is difficult to convince workers to wear ear protectors. They must be impressed with the importance of ear protection and the benefits of it's use. In addition, they should be told:

- **a. How to wear protection properly.**
- **b. There will be some discomfort.**
- **c. There will be no harmful reactions if equipment is kept clean.**

d. It will not be more difficult to hear speech or warning signals.

D. Hearing Conservation Program

Ideally, the object of a hearing conservation program is to ensure that an employee hearing is not affected during his working life to an extent greater than that normally occurring with age, and to preserve it at a level sufficient for normal speech perception.

Australia stresses the detection of early permanent hearing loss with the object of maintaining it below 15 dB averaged over the speech frequencies. A hearing conservation program includes:

1. Pre-employment hearing test. All workers who will be required to work in a noisy environment should have his hearing tested before reporting to work. Those with excessive hearing loss should be placed in other jobs.

2. Periodic hearing exams. Workers with noisy working environments should be required to have periodic hearing tests at least once a year and more if the noise damage potential is rated high.